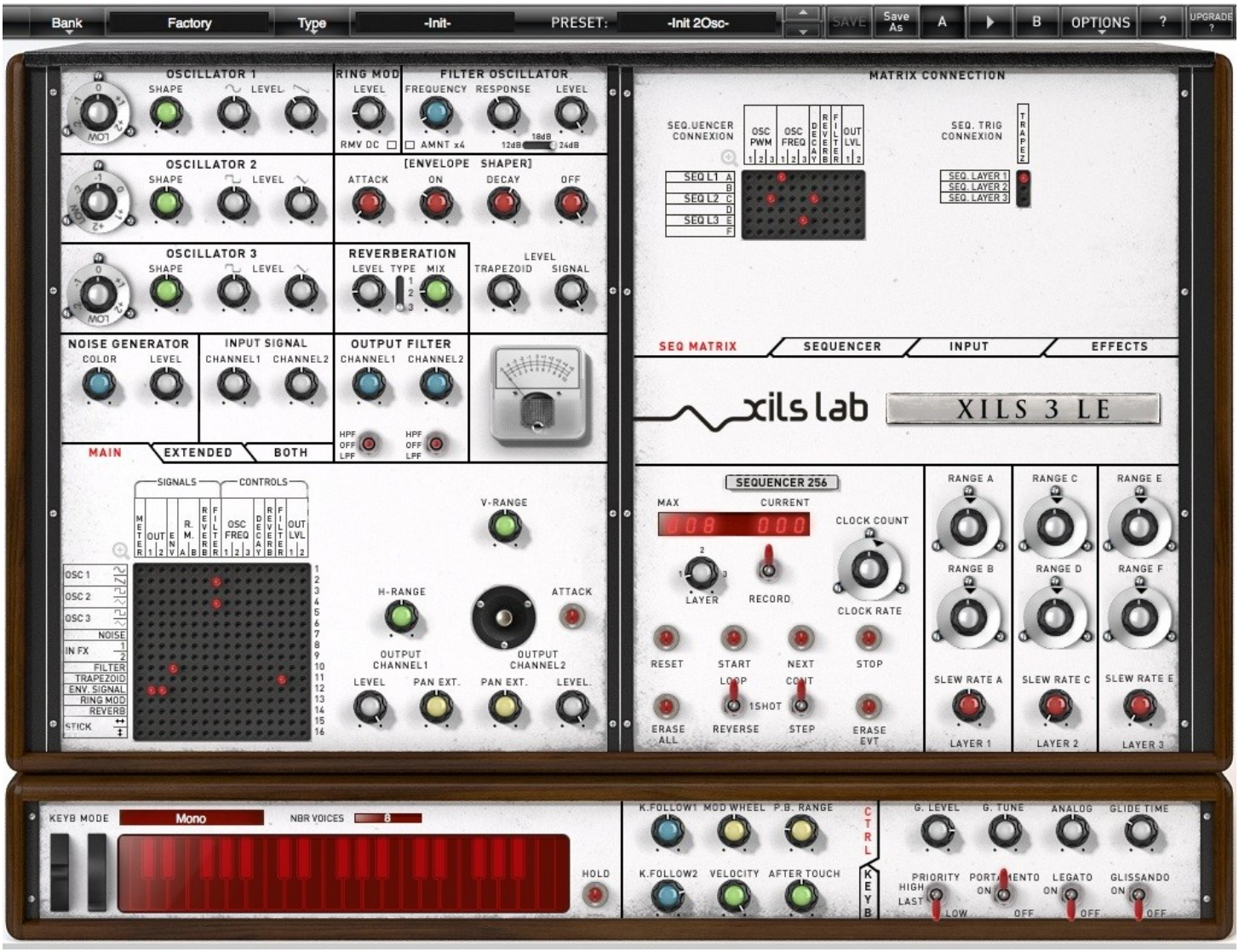
XILS 3 LE Version 2.0
Matrix Modular Synthesizer



User Manual

www.xils-lab.com

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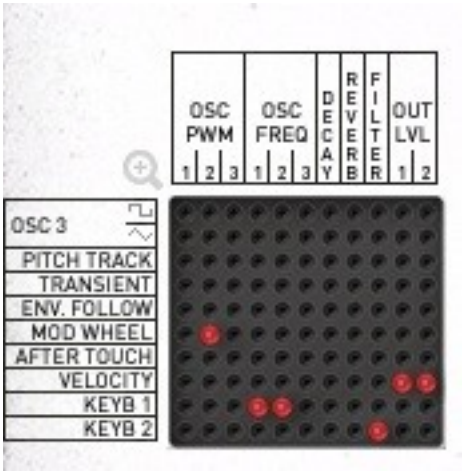
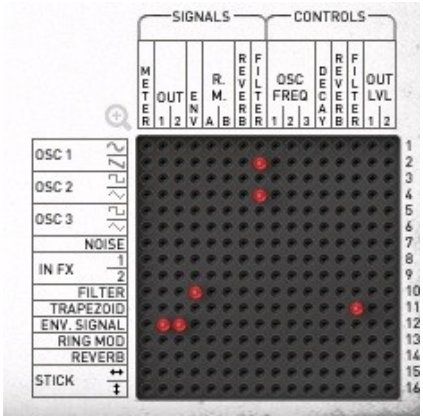
1 Introduction

Thank you for choosing the **XILS 3.2 LE** !

The **XILS 3.2 LE** is a virtual instrument based on the architecture of a classic matrix based modular synthesizer.
Modularity and the Modulation Matrix are the basis of these synthesizers: Up to 440 connections are available to build any synthesizer structure from a lot of finely emulated synthesis modules.

The **XILS 3.2 LE** is based on one main Synthesizer and one 3 layers sequencer.

		Main and extended Matrix showing 16 input and 16 outputs for the first one, 10 inputs and 11 out put for the second. Other matrix for connecting the sequencer or the various trig signal are also available

"like" us on Facebook http://www.facebook.com/XILSLabs and join in the conversation

Note: We plan to release a lot of tutorial videos to help you to get the most of **XILS 3.2 LE**.
When available, you will be able to see these videos on our YouTube Channel
http://www.youtube.lcom/user/xilslab

Note 2: If you have a question about the **XILS 3.2 LE**, we strongly encourage you to join, then post on the Xils-Lab forum: http://www.xils-lab.com/xo_phpBB/. Posting on our forum is the fastest way to get an answer if you experience some trouble with XILS 3, need info about a precise subject, or want to exchange ideas, or patches with other Xilsonauts. It's the best way to be connected to the Xils-Lab world.

2 XILS 3 Features

2.1 ***Synthesizer Modules***

- 6 oscillators grouped in 3 pairs
- 1 self-oscillating low pass filter (12, 18 and 24 db) with analog like behavior
- 1 envelopes (ADSR or Trapezoid)
- 1 Polyphonic Ring Modulator
- 1 Spring Reverb
- 1 Noise generator
- 2 output filters

2.2 ***Input Modules***

- 1 Envelope Follower
- 1 Pitch Tracker
- 1 Gate

2.3 ***Effect Modules***

- 1 Delay
- 1 Chorus

3 Digital Audio Workstation compatibility

XILS 3.2 LE are available in the following formats:

- **Mac OSX 10.4 (32 bits), 10.6 (32&64bits) and later**: VST, Audio Unit, RTAS (Pro Tools 7.0 and later), AAX (32 & 64 bits)
- **Windows 7, XP and Vista**: VST, RTAS (Pro Tools 7.0 and later), AAX (32 & 64 bits)

Minimum system requirements: 1 Gigabyte of RAM and a 2 GHz processor.

XILS 3.2 LE are a plug-ins and are not available as a standalone application

Notice: The screen resolution must be set at least to 1024 pixels width.

4 Installation

4.1 *Serial number*

XILS 3.2 LE uses a simple serial number based proprietary protection.

When launching **XILS 3.2 LE** for the first time, it will ask for this number.
After submitting, you must close and re-launch it once to complete the registration. This serial number will never be asked for again, even when installing updates.

Tip: It is always a good idea to back up this serial number, or to print it, in case you should have to reinstall **XILS 3.2 LE** (i.e. if you encountered a HD crash for example, or have to reinstall your OS).

4.2 *Windows (XP, VISTA, Windows 7)*

To install XILS 3.2 LE on Windows XP, Vista or Windows 7, launch XILS 3.2 LE installer file Please download the latest version from the XILS-lab website.

http://www.xils-lab.com/pages/XILS32LE_Download.html

Once you have accepted the license agreement, you will be asked to select the installation directory. A destination directory is provided as a default. Presets and various files, like this manual, used by XILS 3.2 LE will be stored in this directory. Please note that this location is different from the VST install directory, which you will need to specify in the next step of the installer.

Once the installation directory is specified, you will be asked to select the VST plug-in directory, with a suggested default location. Keep this default directory if you do not use the VST version.

Important notice for Vista or Windows 7: be sure to use a folder write enable and owned by the user (do not use "c:/program files" for instance). Otherwise you will have to run your music application with "administrator rights".

The RTAS plug-in and its table control management Pro-Tools are directly copied into the following directory:
C:\Program Files\Common Files\Digidesign\DAE\Plug-Ins

4.3 *Mac (OSX 10.4 and later)*

To install Oxium on a computer equipped with Mac OSX 10.4 or later, download the latest version from the XILS-lab website to make sure you have the latest version of the software.

http://www.xils-lab.com/pages/XILS32LE_Download.html

Then launch the install program, XILS 3.pkg, and follow the instructions.
Warning: the install program will ask you for your system password.
The various files of XILS 3.2 LE will be copied into the following directories:
Library/Application Support/Digidesign/Plug-Ins
Library/Audio/Plug-Ins/Components
Library/Audio/Plug-Ins/VST/
Library/Application Support/Documentation/XILS-lab/XILS 3.2
..users/username/Library/Preferences/XILS-lab/XILS 3.2

5 Quick Start

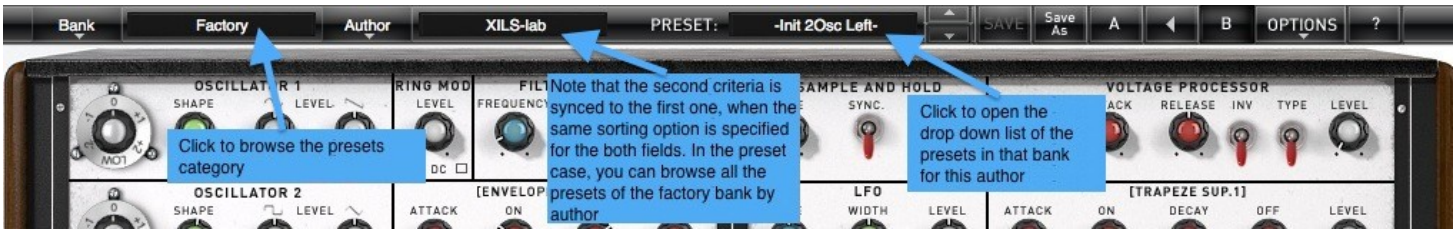
5.1 ***Launch, Play***

When you launch **XILS 3.2** in your host, an Init preset is loaded.
It is a simple filtered one-oscillator sound, which can be seen as a basis for your sound design.

You can directly use or modify this preset, or load one of the factory presets.

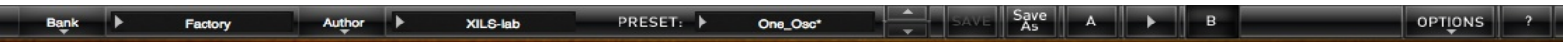
To browse the preset library, just select a category of instruments, using the **BANK** drop down menu found at the left of **XILS 3.2** Tool Bar. (See Picture Below)

You can then use the up and down arrows located at the right of the preset name, or open the bank drop down list by clicking in the **PRESET NAME AREA**


Bank
Factory
Author
XILS-lab
PRESET:
-Init 2Osc Left-
SAVE
Save As
A
B
OPTIONS
?
Click to browse the presets category
Note that the second criteria is synced to the first one, when the same sorting option is specified for the both fields. In the preset case, you can browse all the presets of the factory bank by author
Click to open the drop down list of the presets in that bank for this author

Note: We have also provided different Init Patches, which can be seen as a good basis to begin to design new presets.

5.2 ***Toolbar***



Note: The toolbar at the top of the interface lets you load or save presets, as well as **BANKS** of presets, make a comparison between two different versions of the current preset A & B, or modify the options. These functions are described in detail later in this manual.

Selecting a preset: Click on the **PRESET NAME AREA** to display the list of the available presets in the current sorted group.

Warning: Please note that selecting a new preset without saving your current settings will erase any changes you have made to those settings.

Selecting a group of presets: Click on one on the two CRITERIA buttons to change criteria and define a group of presets that will match the two filtering criteria.

You can sort presets by: **Author, Feeling, Type, Style, Bank or Projects**.

Info: Please note that **XILS 3.2 LE** will display presets sorted by instruments Categories (Type = Bass, Keys, Leads etc.) and Library Bank by default.

Please note that the **XILS 3.2 LE's** powerful Preset management is fully detailed in chapter 6 of this manual.

5.3 ***Adjusting the instruments parameters (Knobs, switches)***

On **XILS 3.2 LE**, most sound parameters, like the pitch of an oscillator, or the filter's Cut-Off frequency are controlled using Knobs.

To adjust the parameters of **XILS 3.2 LE** with the mouse, you have two axes: horizontal and vertical, which will give the same results.

To increase a parameters value, click and drag the knob to the right or to the top

To decrease a parameter value, click and drag the knob to the left or to the bottom.

Fine adjustments: If you **right-click** on a parameter, or if you **hold shift while clicking**, you can adjust the parameter with fine precision (the ? button of the toolbar displays a panel summarizing these shortcuts).

Keyboard shortcuts

In addition we have provided some soft keys combination to perform several very useful tasks:

Windows:

- CTRL+left click: reset parameter to its default value.
- CTRL+right click or CTRL+Shift+left click: initialize the default value of the parameter.
- Win+Alt+CTRL + click: open the MIDI Control panel, with the parameter already selected.
- Mouse wheel on the matrix: open a zoom

OSX:

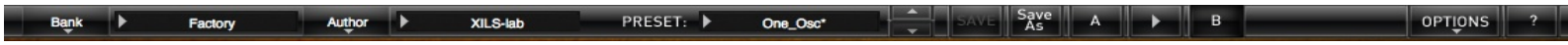
- Apple+left click: reset parameter to its default value.
- Apple+Shift+left click: initialise the default value of the parameter
- Apple+Alt+CTRL + click: open the MIDI Control panel, with the parameter already selected.
- Mouse wheel on the matrix: open a zoom

The switches are simpler: just left click to change their state. A right click will change the state only while the button is pressed, and return to the previous state when it is released.

When a parameter is chosen via a drop down menu, just click on the button or label and select the item.

6 Preset Management

6.1 *Main Toolbar*



In the toolbar you can find two Criteria buttons, displaying the CRITERIA name (Bank, Author, Type, Style, Feeling or Project), which open the sort management menus.

The first two text fields show the current sorting criteria, and the third shows the chosen preset in the resulting selected group of presets.

Clicking on the arrow on the left of the category or preset names opens the corresponding menus.

Info: Once one parameter of a preset has been modified, the name of the preset is followed by a *****, indicating that the current settings of **XILS 3.2 LE** no longer matches the stored preset.

When you want to save a modified preset, click on the **Save** or **Save As** button.

The **SAVE** function will overwrite the current preset with all the edits you have made. The **Save As** function gives you the opportunity to save your preset under another name, in a different bank, and with different tags.

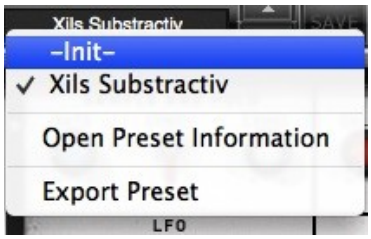
Factory Preset Protection: In order to prevent you from erasing them, the Factory presets cannot be overwritten using the **SAVE** function. When you edit a Factory preset, the **Save** button will therefore be grayed, and you MUST use the "**Save As**" function to save it in another bank.

If you edit any other preset than a Factory one, the **Save** and **Save As** functions will both be available.

As soon as an edited preset has been saved, the ***** will disappears. Until you eventually begin to edit it again.

6.2 *Preset menu*

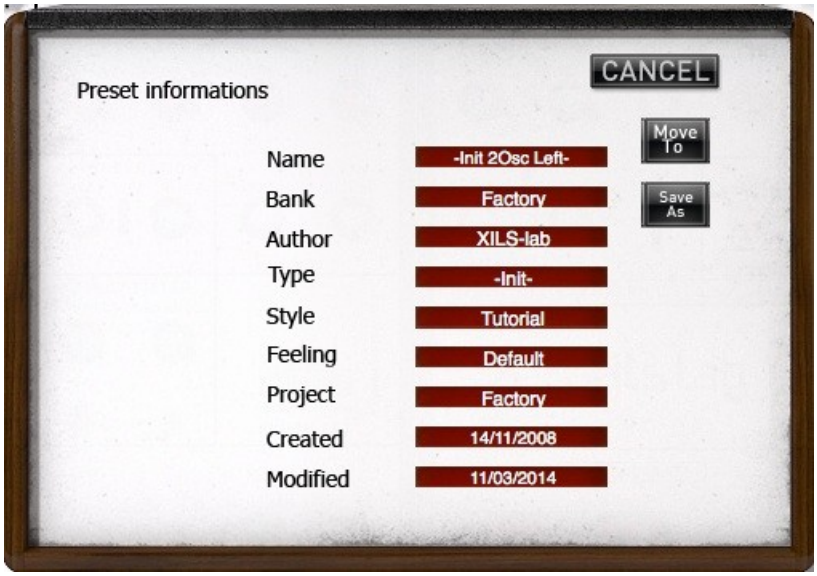
Click in the **Preset Name Area** to display the preset list. Here you can choose and load another preset from the current selected group of presets into **XILS 3.2 LE**.



In this menu, other actions are also available:

Delete Preset: use this to delete the current preset (a popup confirmation window appears). This option is only available if the current preset is not a factory one.
Export Preset: Use this function to export the current preset in an external file (???? format). This file can be imported later as a new bank. It always makes sense to back up your presets on external media.

Open preset Information (or click on SAVE AS): opens the following preset information window where the name and all other information related to the current preset can be displayed or changed.



In this window you can modify the **Name** of the preset before saving it, or moving it to a NEW LOCATION (Bank) specify the **Bank** in which the preset will be saved, or create a **NEW BANK**, and also enter **TAGS**, or create your **OWN CUSTOM NEW TAG** in the other fields:

- **AUTHOR (**Your name, mostly used by Sound Designers for factory presets**)**,
- **Type** (Category of the instrument like Keys, Leads, Basses, also)
- **Style** (Musical Genre),
- **Feeling** (Cold, warm, soft, Sweep,) and finally
- **Project** (My Favorites, My Song, My_Live_Project, Patches for my next CD).

You can also see its creation date and the last update date.

To modify a preset name, click in the preset **NAME** field; and enter the new preset name.

To change the preset location, click on the **BANK** display, this will open a menu when you can select one of the existing sound-banks, or create a NEW BANK.

Note: You can add a new item in any category, and therefore create custom banks (My Sound-bank), custom styles (Musical genres), categories of instruments, and custom projects etc.

Creating custom tags and sound-banks: To add a new item in any field, click in this field, then instead of using an existing item, select "**New....**", which will appears at the bottom of the list. This will open a separate window in which you can write the name of the new item. Click OK to confirm this, name and the newly created tag will now be active, and selected for the current preset.

Note (You may have to browse until the end of the list in order to select "new" depending on its length.)

TIP: How to create a Favorite Sound-bank:

Two possibilities:

1/ Just create a bank, named My Favorite, and save all the interesting patches in this sound-bank. To browse all your favorites just set the first criteria to **BANK**, then select My Favorite (you can still use the second criteria to filter results by categories of instruments to browse all your favorite basses for example) This method is fast, but will duplicate your patches.

2/ Just create a new tag in the **Project** field, and name it My Favorite, then just resave (using **SAVE AS**) any interesting patch with this tag. To browse your favorite, just choose this tag in the project field as first criteria. This method is maybe more interesting because you can reverse it: Should you decide a particular patch doesn't deserve no more to be honored by its Fav tag, just remove the tag and resave it.

Note: Please be aware that creating to many categories can also have its drawbacks, making browsing go from slightly difficult to very cumbersome. Should you create around 200 different custom instrument categories, it would become very difficult to browse the library using the Style (Category) sorting. So use these possibilities wisely.

Once you have filled all the desired/required fields:

SAVE AS: Will save the current preset in the chosen Bank, with its new (or unchanged) Name, and tagged with all the fields you filled in.

MOVE TO: Allows transferring the current preset in another location (Bank). This is handy to gather a lot of preset into a single location, or User Bank, which you can export in a single file containing all the presets you created or edited for a given project.

CANCEL: Will just cancel all operations and return to the standard **XILS 3** GUI.

6.3 ***Sort menus***

The sorting menus are unique and a powerful tool. Allowing you to perform sophisticated tasks, such as displaying the preset list organized in a variety of different ways:

- All the Basses of your Sound Library
- All the Basses tagged with a given musical genre
- All the Pads made by a given Sound Designers
- All instruments for a musical genre like Electronica, or Funk
- All instruments that were recently imported in a bank (like additional sound-sets from Xils-Lab or 3rd party vendors)

There are indeed a lot of possibilities, and we're confident that you'll find the best way to customize it to your personal needs.

In order to perform such selections, all you have to do is to select an item in the first sort menu. This represents the first and main criteria for the search engine.

- **AUTHOR** (Your name, or a Sound Designer name for factory presets**)**,
- **Type** (Category of the instrument like Keys, Leads, Basses, etc.)
- **Style** (Musical Genre),
- **Feeling** (Cold, warm, soft) and finally
- **Project** (My Song, My_Live_Project).
- **ALL** (this item is not used for sorting the preset)

These primary results can then also be filtered according to second criteria. Which can be chosen from a similar list in the secondary sort menu.

Sometimes a picture is better than a lot of text, so you'll find below an example where you can find out how to select all the basses designed by a given Sound Designer.

Please note that, once you are familiar with this system, you can also perform some operations in a single click, by using the Sub Groups to choose a preset:

In the picture below the primary sort menu is used to browse the different banks. Then in a factory bank, the author Xils-Lab is selected, and finally the Preset -Init2Osc Left-. In this example the preset is selected in a single click operation, and the presets available in the preset list will be all the Xils-Lab presets available in the entire Factory Sound Library.

Bank
Factory
Author
XILS-lab
PRESET:
-Init 2Osc Left-
SAVE
Save As
A
B
OPTIONS
The sort menu is used to select a cotegory of instruments (Tutorials)
The sort menu 2 is now used to filter the Tutorials made by a given Sound Designers
Selecting "Style" here would have filtered the tutorials according to a musical genre
In the preset area you can now browse all the tutorials made by this Sound Designer

Click on the **row** of the sorting button to open the menu used to manage this sorting group (or sub group). Here you can directly select and load any preset from any group or subgroup.

6.3.1 Sorting Menu: Additional Functions

In this menu, other actions are also available:

Delete: deletes all of the **presets of the current group that are not factory ones.**

WARNING: Use this function with EXTREME care: If the bank does not contain any factory presets, ALL PRESETS IN THIS BANK WILL BE PERMANENTLY DELETED.

Rename: modifies the current group name. Selecting this choice will open a window where the new name will be entered.

Use Factory: enables or disables the display of factory presets.
Sort By: This function sorts the presets according to bank, author, project, or shows all presets (**Bank Name**, **Author Name**, **Project Name**, **All Presets**). The preset menu will show presets of the same category (same author, same project or same bank).

Export Bank: This function exports a bank in **XILS 3's** proprietary cross platform format, (Mac and PC). The selected bank (i.e. the bank which contains the currently active preset) will be exported to a user specified location on your hard drive.

Import Bank: This Function allows you to browse your hard drives to select a file and imports an **XILS 3** bank. Please note: These last two functions (Import, Export) are not available from the second **sort** menu.

6.4 *A/B comparison*

You can store two different versions of a patch simultaneously in the two A and B NON PERMANENT memory slots and instantly switch from one to the other to compare their settings.

When you launch **XILS 3.2**, the default-activated memory is A. When you load or modify a preset, this memory –A- is also modified in real time according to your edits. You can switch to B memory by clicking on the B button.

To copy the current active memory content to the other memory slot, just press the button labeled -> or <-, according to the current active memory.

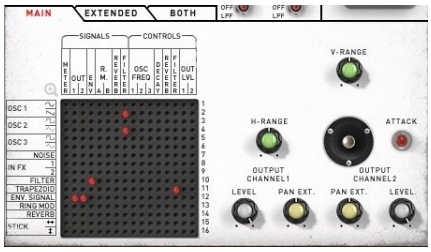
With this A/B comparison system, you can easily have two settings and compare them in a convenient way.

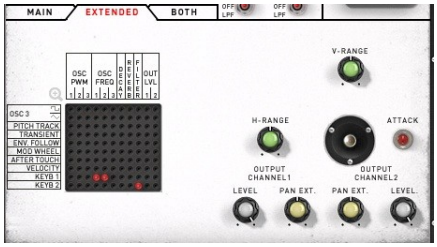
Note: Please note that by default, the B memory slot, until you copy settings into it or until loading a other preset within the other memory slot, is populated with the init patch loaded in the A memory when you first start **XILS 3.2**.

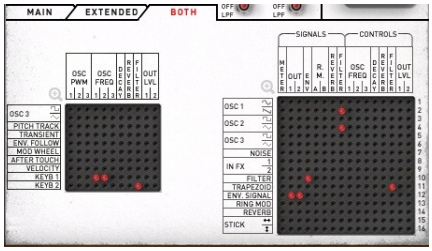
7 XILS 3.2 LE GUI description

As you've seen your **XILS 3.2 LE** is based on one main synthesizer and other modules. The main synthesizer is a matrix base modular machine for which every connection has to be done.
There is NO default connection between modules and even trig must be taken into account. This is why the **XILS 3** is so powerful (albeit having a learning curve which worth to go through)

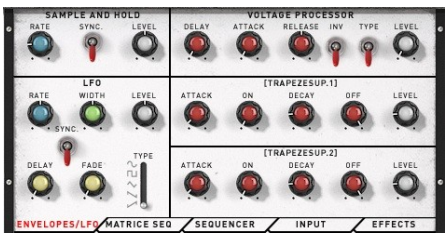
The main synthesizer has two matrixes, one 16x16 called main, the other 10x11 called extended. You can display either the Main the Extend or both, clicking on the corresponding tab.

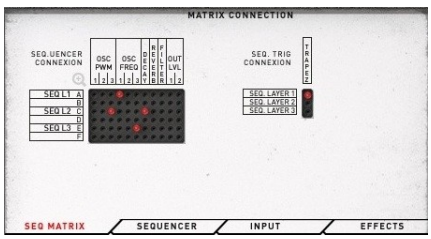


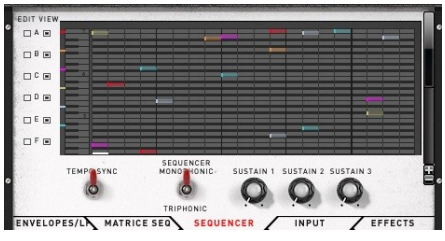


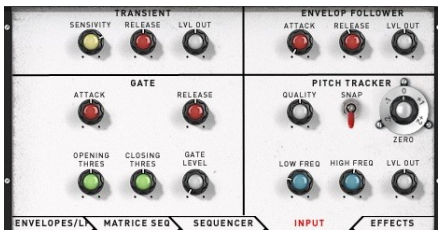


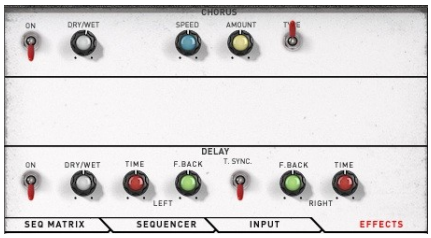
In the sequencer/modules panel, you can switch between several tabs to display various functions: Env/LFO, Inputs, Effects, Sequencer, Sequencer connection.



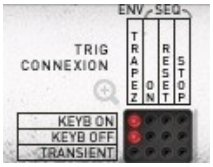








In the same way, you will find a tab to display either the keyboard trig matrix or the keyboard controls (velocity, mod. Wheel and so on ranges)



Important note : If your computer screen shot is not hight enough to display the whole graphic interface, go to the **Option** menu and select **Display->Reduced**. Then relaunch the plug-in. This will dispatch the keyboard panel into the tabs over the sequencer.

8 XILS 3.2 LE Matrix description

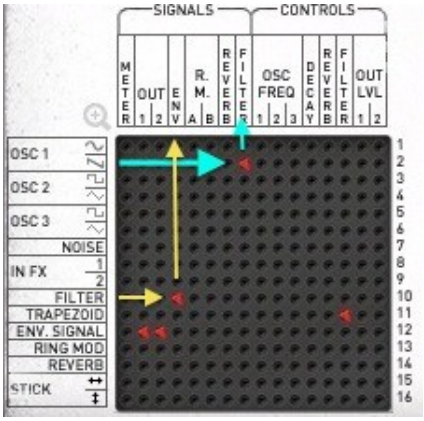
All the **XILS 3.2 LE** audio paths and trigs are done with the matrix, so having some information regarding this major component is important.

A matrix is a component that allows you to connect the output of one module to the input of another.

In all the **XILS 3.2 LE** matrix, outputs are listed in the raw and inputs in the column. Putting a pin will connect the corresponding output to the corresponding input.

Input or output can be audio signal (oscillators, filters,) or control signals (Trapezoid, Stick, Osc Frequency, Filter frequency,...)

There is not a limitation, you can always connect audio signal output to control inputs, and it will be treated at audio rate.



For instance in this matrix:

Oscillator 1 saw output is connected to the filter audio input.

Filter audio output is connected to the VCA audio input (named ENV as in the original model)

Finally output VCA (ENV. SIGNAL) is connected to the output of the synthesizer (OUT 1/2)

Connection is always going from left to right and bottom to top.

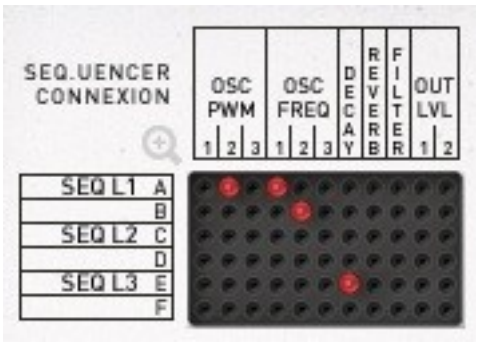
As the matrix can be small, clicking on the magnifier, or using the mouse-wheel over the matrix, will open it in a big pop-up for an easier reading.

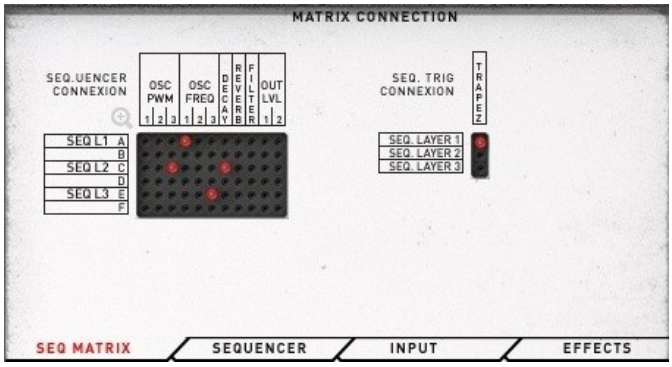
To remove a connection, just right click on a pin.

9 XILS 3.2 LE Trig connection description

As we explained, there are absolutely no internal or default connections in the **XILS 3.2 LE**. This means that even the connection between the keyboard and envelops for instance, must be done.

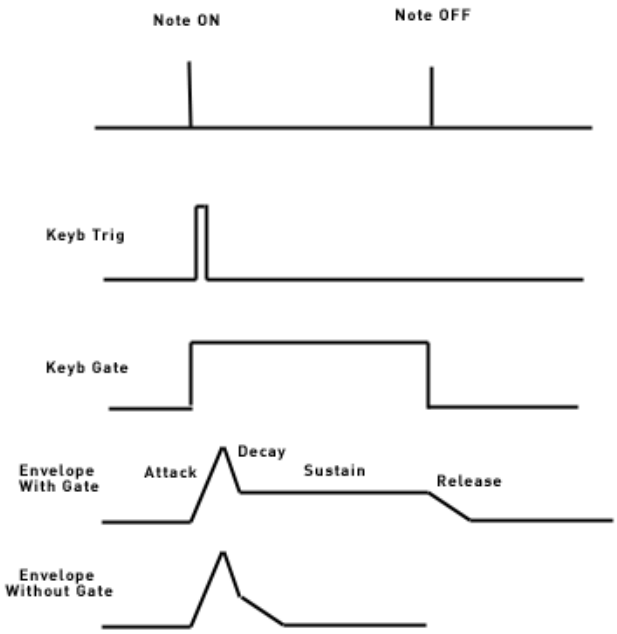
Two trig sources are available: the Keyboard and the sequencer. They are grouped in two different panels: You will find the Keyboard trig matrix at the right of the virtual keyboard and the sequencer matrix in the sequencer/module panel (under the tab “Seq Matrix”)





A “trig” connection is connecting a “trig” or “gate” signal to the envelop.

As shown in the picture below, a “trig” is a one-pulse information event for beginning an envelope cycle starting a sequencer. A “gate” is a pulse with a certain width: from the keyboard, the gate is remained until the note is off, from the sequencer; the gate is depending on the “sustain” knobs (see the sequencer chapter).



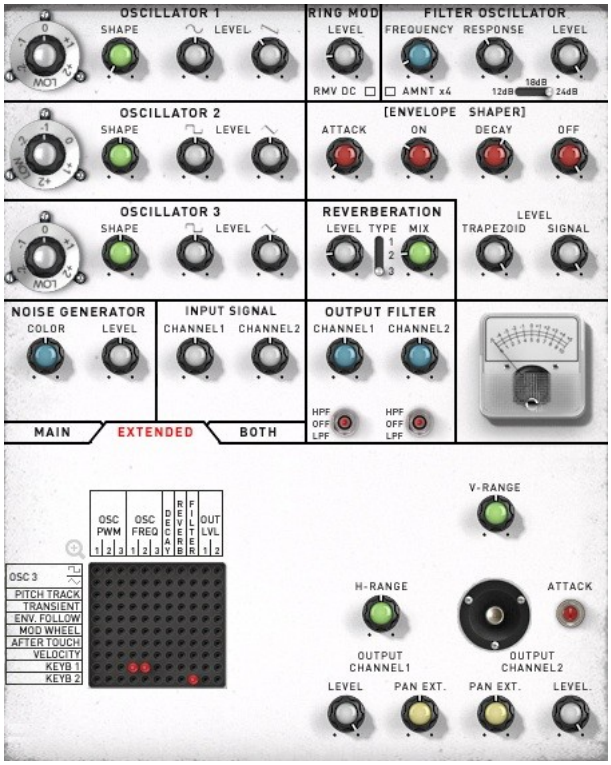
Details will be explained in the chapter related to module, which need trig or gate

10 XILS 3.2 LE modules description

The **XILS 3.2 LE** GUI is divided into three areas : One cabinet is dedicated to the main synthesizer, one cabinet dedicated to the keyboards and its controls and one cabinet dedicated to the advanced analog like 3 layer sequencer (based on the EMS 256 old unit) and other modules.

10.1 ***Main synthesizers***

The main synthesizer is divided in two parts, the synthesis and the matrix and level part. The matrix part itself has tabs that can display the main 16x16 matrix, the advanced 15x15 matrix with extended connection menus or the both matrix. When only one matrix is displayed, the output level and pan as well as a joystick are also displayed.



The synthesis part is build with (from the left to the right, top to bottom)

- Three oscillators
- One ring modulator
- One self oscillating filter
- One envelope shaper with its dedicated amplifier (VCA)
- One noise generators
- One input level (for using the XILS 3 as an effect processor)
- One output static filter
- One vu-meter.

The second part shows the connection matrix and the output level and pan.
A Joy-tick (MIDI controllable) can be connected through the matrix

10.1.1 Oscillators

Three oscillators are available. The first one is outputting a sine wave and a saw, with independent level. The Shape knob allows to change the sine wave form and to add a new pulse to the saw.

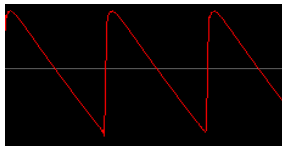
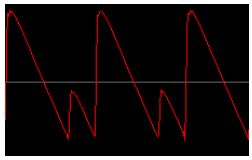
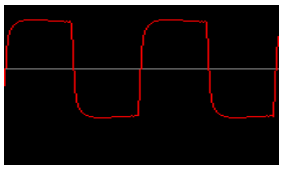
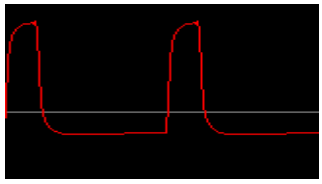
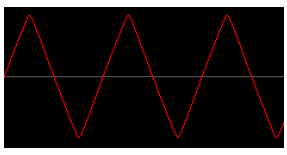
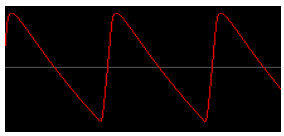
The second oscillator provides a square and a triangle, both with independent level. The Shape knob changes the pulse width of the square and the symmetry of the triangle waveform.

The third one outputs the same waveform than the second but two octaves below to be used as a LFO.

The pitch of the oscillator is set by the internal knob for fine-tuning (from -12 to +12 semi-tones) or by the external ring for the octave range.

Note: The pitch of the oscillator must be connected. This connection is done in the advanced 15x15 matrix. Putting a pin between the Keyboard follow (1 or 2) and the Oscillator Frequency modulation will do the trick. To tune the oscillators according to the standard midi notes, the keyboard follow level (in the Keyboard control panel) must be set to 0.5 and the amount of the pin must be maximum.

Shape: this knob sets the shape of the sine, square, ramp or triangle waveform. For the sine wave, it adds odd harmonics, for the square, it modifies the impulse width, for the ramp it adds a second front, and for the triangle, it modifies the raising front.

Shape	0 or 50%	20%
Ramp		
Square		
Triangle		

Frequency: this knob has two parts, one for coarse tuning and the other for fine-tuning. The outside ring sets the octave of the oscillator frequency: you can set it from -2 to +2 octaves, or it can be set to **Low**. This Low setting gives a very low frequency oscillator, which can be used for effects. The inside part of the knob fine-tunes the frequency. When tuning with the left mouse button, it sets the frequency by semitone steps. When tuning with the right mouse button, it fine-tunes the frequency with more precision.

Level: this knob modifies the output level of each waveform. This can be useful for blending the mix of the waveforms and setting the amount of modulation created between them.

The oscillator's frequency, shape and level can be modulated with control or audio signal thanks to the matrix connection (for shape, see the advanced matrix setting panel).

10.1.2 Filter

	There are three modes for this low pass filter which can be selected by the horizontal switch: • 12-db/Oct-attenuation mode. • 18 db/Oct self-oscillating analog filter • 24 db/Oct self-oscillating analog filter When engaged, the **AMNT x4** check box allows to increase the amount of the modulation.

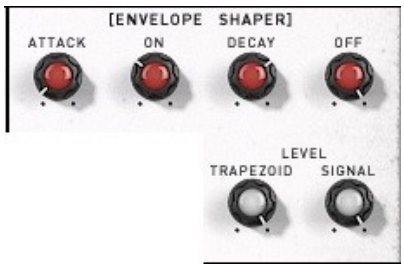
Frequency: set the cutoff frequency. It can be modulated (audio or control rate) by connecting a pin at the corresponding destination in the matrix.

Response: set the emphasis (the Q-factor) of the filter. Over 3.8 it begins to self-oscillate for the 18 and 24 db modes. The response can also be modulated (see advanced matrix explanation)

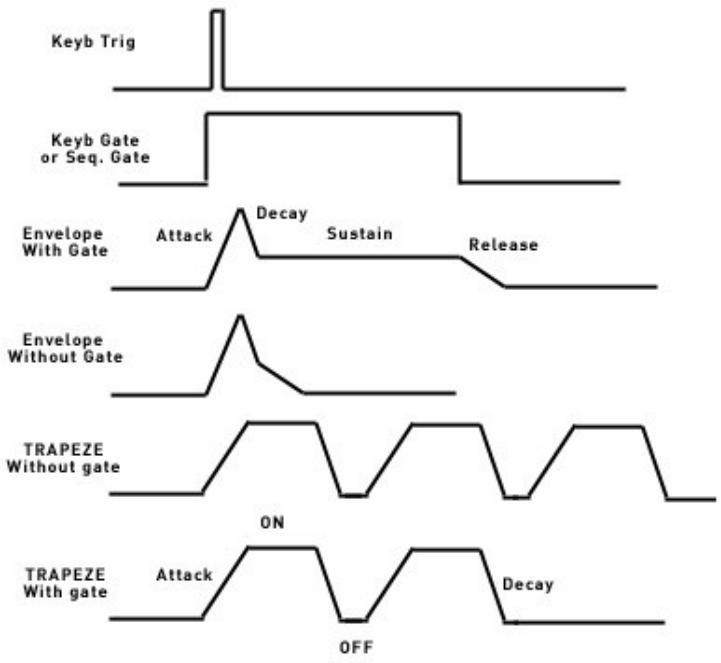
Level: set the output level of the filter.

Note: the internal non-linearities of the 18db and the 24-db filters are not the same. The 18-db filter has been finely emulated reproducing as close as possible the behavior of the original 18db diode layer filter.

10.1.3 Envelope Shaper

	The envelope shaper of the synthesis part is linked with an internal amplifier (it is the only internal connection of the synthesizer) The amount of the amplifier level modulated by this envelope is set by the TRAPEZOID knob and the output level is set by the SIGNAL nob

The envelopes of the XILS 3 have two modes, Trapezoid as the original model and ADSR as almost all the standard synthesizers.



Here is a schematic of the two-mode cycle, Envelope (ADSR) and Trapeze.

ATTACK: Set the attack time step common for the both modes.

ON: set the ON time step of the Trapeze mode.

DECAY: set the decay time step common for the both modes.

SUSTAIN: set the level of the sustain step for the envelope (ADSR) mode.

RELEASE: set the release time step for the envelope (ASDR) mode.

OFF: set the Off time step for the Trapeze mode. This is the time between the end of the decay and the beginning f a new cycle. When this knob is turned full right there is no loop.

As you can see in this schematic, the sustain step is maintain only if the Gate is connected.

In the same way, if the gate is not connected, the Trapeze mode will loop indefinitely if the OFF time is not set to maximum.

10.1.4 Noise Generator

Most of the sounds you can hear have a noise component in the background or during the attack. To reproduce this sound feature, the **XILS 3** has a noise generator module.

Level: this knob sets the output level of the noise.

Colour: this knob sets the colour of the noise, from a very coloured noise (less high frequency) to a standard white noise, passing through a standard pink noise.

The level and colour can be modulated through the advanced connection matrix.

10.1.5 Ring Modulator

LEVEL: this knob sets the output level of the ring modulator.

RMV DC: By clicking on this check box, you remove the DC component of the input ring modulator signals.
Connecting the Joystick to one of the input, the effect can be listening only when moving it. Otherwise the level is null

10.1.6 Reverb

A monophonic spring reverb unit is available. Monophonic meaning that in case of polyphonic sounds, all the voices are mixing before. But the output of the reverb can be used as an input of polyphonic modules.

	LEVEL: This knob sets the output level of the Reverb. **MIX**: This knob sets the mixing between the dry and the wet signals. **TYPE**: This switch sets the type of the reverb

10.1.7 Output filter

There is a static filter, low pass or high pass, for each of the two outputs, left and right. This filter can be useful for limiting some high frequencies or removing rumble while keeping a full range for the dynamic filter.

	The two knobs set the cutoff frequency of the filters and the switch is selecting the type, high-pass or low-pass. When the switch is set to the centre, no filter is inserted.

10.1.8 Input Level

	The **XILS 3** can also be a useful and versatile audio processor effect. In this case, the Audio Input of the plugin is directed in the Main matrix and the level can be adjusted with these two knobs.

10.1.9 Joy-Stick and output levels

As its original model, the **XILS 3** has a joystick, of course fully controllable by MIDI messages.

The **V-RANGE** and **H-RANGE** set the level of the horizontal and vertical modulation.

CTRL+click puts it back to the centre and right click allows you to keep the mouse moving the Joystick without keeping the button pressed. This could be useful in certain performances sessions.

The "**ATTACK**" button, named as the original model, allows to trig the main Trapezoid envelope (of course MIDI controllable)

The **LEVEL** and **PAN** knobs are setting the output level of this synthesizer part.

10.2 Sequencer

The sequencer of the **XILS 3.2 LE** is very useful and can bring a lot of sound design possibilities, but need a little learning curve to be able to use it with all its power.

10.2.1 Front sequencer controls

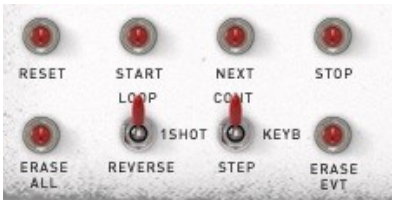
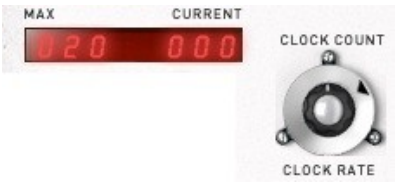
The **XILS 3.2 LE** sequencer is inspired from the original EMS 256 sequencer, which was, in its time, a revolutionary machine! It has three layers, each one with two tracks.

This means that each of the layers can send trig information and can record two independent values.

	The sequencer has six output tracks organised into three independent layers of two linked banks. The section of the sequencer panel shows the six tracks and how the three layers are used. The external ring of the corresponding double-knob with a small triangle shows each current output value. You can set the current output value of a sequencer step by clicking on the corresponding double-knob's external ring. The internal part of each double-knob sets the range of the corresponding output bank, and thereafter the amount of modulation. Used as pitch modulator this inner ring should be set to 12 o'clock to provide a normal scaled pitch modulation.

	Switching ON the RECORD button, allows you to enter sequence with your Midi keyboard instead using the Sequencer edit panel. In this mode, when you hit a note, the pitch will be memorised in the steps of the first bank of the corresponding layer and the velocity in steps of the second bank. The current layer on which the keyboard acts is set with the three-position **LAYER** knob.

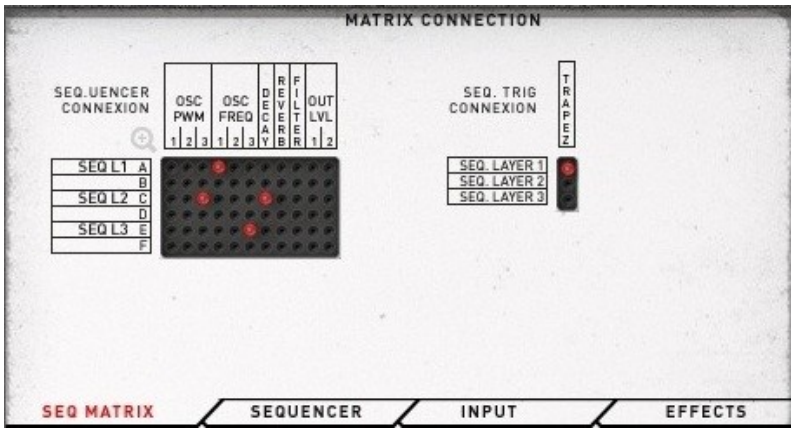
A series of MIDI controllable buttons controls the sequencer and a double-knob controls the sequencer's clock rate.

To help with your creative workflow, independent sequencer presets can be saved and recalled. This preset management is under the Sequencer 256 label:

10.2.2 Connecting the sequencer

Above the sequencer controls you will find the Sequencer Connection tabs.



With these matrix you can connect the sequencer outputs to synthesizer parameters like Oscillator pitch, PWM, filter cutoff frequency or output level.

You can also trig the envelope.

For instance, connect layer 1 trig to the first Trapezoid envelope, and layer 1 bank A to the oscillator frequency: With these connections, at the beginning of each step, the Trapezoid envelope will be trigged, gated according to the "SUSTAIN" knob (see below) and the oscillator pitch will be modulated according to the sequencer output A value.

10.2.3 Recording a sequence

First you need to

_ Connect the sequencer output to some parameters (see above)
_ Start the sequencer by clicking on the start button
_ Switch ON the "RECORD" button with the 1/2/3 LAYER knob set to 1 (if you want to record the other layer, just set this knob to 2 or 3 and adapt the explanation below to the corresponding sequencer layer and banks)

Each time you hit a note on your MIDI keyboard (or on the virtual keyboard); the value is recorded in the sequencer (Pitch for the Bank A, Velocity for the Bank B)

At this time, if the switch **CONT/KEYB/STEP** is set to the CONT position, the record is done at the current step, which is continuously changing. Useful for live performance, this could be tricky for entering a sequence.

For this, set this witch to **KEYB** position: the current sequencer step is changing after each new note. Set this switch to the **STEP** position allows you to change the value of the current step: with your Midi keyboard or directly by moving the outer ring of the corresponding bank/layer.

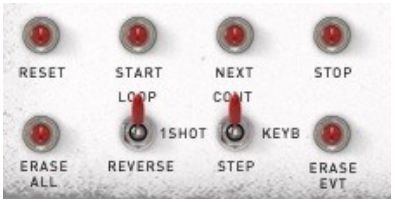
Of course you can also enter your sequencer using the edit panel you will find one the Sequencer Edit Tab (see below).

To erase all of your sequence, just hit the "**erase all**" button: a confirmation popup will open. To erase the current step (removing the trig information and setting the value a zero), hit the "**erase evt**" button.

10.2.4 Playing a sequence

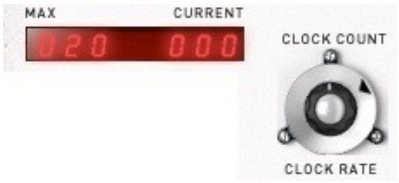
If a sequence is already recorded in the sequencer, then for playing it you need to:
_ Connect the recorded sequencer output to some parameters (see above)
_ start the sequencer by hitting the start button.

The sequencer will start outputting trig and value information. To stop it, just hit the stop button.
If you need to reset the sequencer clock, hit the reset button



The keyboard can do starting, stopping or resetting the sequencer after connecting the keyboard trig information to the corresponding sequencer trig inputs (see the Keyboard trig Matrix)

When the sequencer is running, you can adapt the speed by turning the inner knob of the sequencer clock. The outer ring is setting the number of steps, from 2 to 128. These two values are displayed in the led like display.

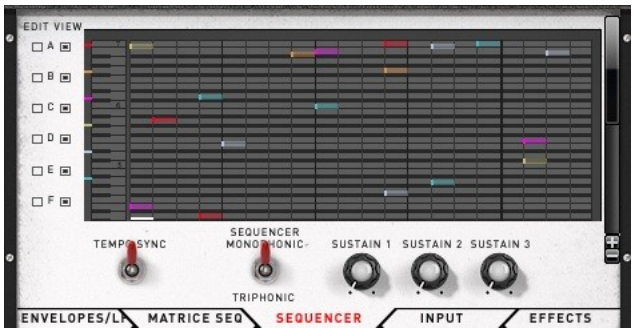


The switch **LOOP/1SHOT/REVERSE** allows you to select to mode of the sequencer. In the first case, the sequencer will read the information in the forward mode, looping from the end to the beginning of the sequence. In the 1 shot mode, the sequence will be read only once, stopping at the end. To read the sequence a new time, the start button must be hit (or trigged).
In the reverse mode, the sequencer will loop in reverse mode (the sequencer will be read backward)

The switch **CONT/KEYB/STEP** allows you to select the clock mode: CONT (Continuous) when you need the sequencer playing continuously, KEYB, changing when a note is pressed on the keyboard or STEP, changing when the "**NEXT**" button is pressed.

10.2.5 Using the Sequencer Editor

The **XILS 3.2 LE** provides a simple mouse editor for the sequencer. Using the old analog push-button way to enter or modify a sequence can be difficult that's why this editor was created to help you.



On the left of the screen you will find check buttons. The left ones are for selecting which track will be changed by the mouse, the right one are for selecting which tracks are displayed.

For instance, clicking on the A edit check will enable the Layer1 track A to be edited by the mouse: left click on a step will add trig information and dragging the coloured rectangle will change the corresponding value.
Only one track can be changed at a time. If you need to modify a different track, you will need to change the Edit check selection.

To remove a step, just right click on it: this will remove the trig information and set the value at zero of the corresponding track.

Click on the + or – button allows zooming in the sequencer piano roll.

The **SUSTAIN** knobs are setting the time during which the trig information are hold. When set to 0.0, the trig is hold during the entire current step; otherwise it is hold according to the value.
If the sustain is longer than a step, then some trig information won't be sent (the envelop, if connected, won't be restart its cycle).

TEMPO SYNC switch allows the sequencer clock to sync to your DAW tempo.

TRIPHONIC: this switch has a particular action. The sequencer has three layers and then three trig inputs. You can send each of them to a different envelope. But in the case you need two envelopes (or more) for your sound, three layers is not useful. Switching on the TRIPHONIC button allows the sequencer to send trig information to three independent voices. This way you will get a "three voices" sequencer.

10.2.6 Using the Sequencer preset menu

The **XILS 3.2 LE** provides a menu to save sequencer settings. Only the sequencer values and the sequencer trig and connection are saved within this feature. If you need to start/stop/reset the sequencer with the keyboard, you will need to set this independently.

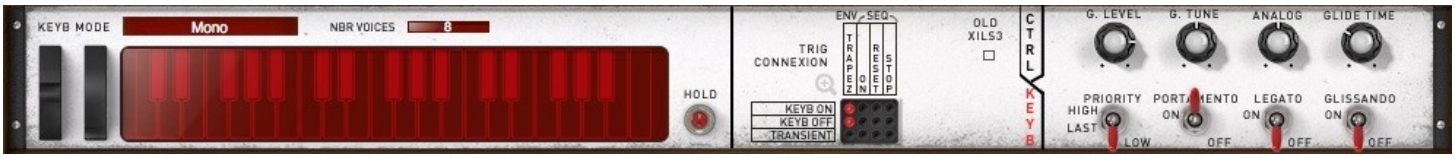
Clicking on the sequencer 256 label opens the menu where you can launch a preset, save the current one or create a new one (either with the current settings or with the default values).

The Random choice allows to initialize the sequencer with random values and trig and step number.

10.3 Virtual keyboard and Controls

The keyboard lets you play notes, by clicking on its keys that are sent to **XILS 3.2 LZ**. The keyboard also reflects the MIDI note ON information that **XILS 3.2 LE** receives, triggered by an external keyboard controller, or your DAW.

When the **HOLD** button is engaged, all the notes are held until this button in disengaged.



In this panel, you will also find global controls and amount of the keyboard related parameters.

NBR VOICES: set the number of available voices in the case of polyphonic sounds.

KEYBORD MODE: set the playing mode of the synthesizer. This is a drop down menu where you can choose between several options.

- **MONO**: monophonic mode, only one note playing at a time, with low note priority.
- **CIRCULAR POLY**: a polyphonic mode with up to 18 active notes at a time. Each voice is chosen in a circular manner. When a lot of voices are available and long release are setup, this mode can be very CPU heavy.
- **RESET POLY**: a polyphonic mode with up to 18 active notes at a time. Each new note is played with the first free voice, cutting the current release and reducing the CPU load.
- **UNI2**: a monophonic mode with two active notes of the same pitch playing. Thanks to the **detune**

knob, a phasing effect can be created.
- **UNI4**: a monophonic mode with four active notes of the same pitch playing.
- **UNI6**: a monophonic mode with six active notes of the same pitch playing.

The portamento/glide parameters define how the note transitions behave. In monophonic mode, only one note is played, so each transition glide occurs between two successive notes. When a polyphonic mode is enabled, note transitions are cyclic. This means that note transitions are undetermined, and the note from which the glide is calculated is one of the previously played notes. The following parameters are available:

PORTAMENTO: activates or deactivates the portamento mode. When the portamento mode is enabled, the note transitions are progressive in pitch.

GLIDE TIME: This knob adjusts the transition time between the notes.

GLISSENDO: This switch activates semitone transitions between notes. When deactivated, the glides are continuous.

LEGATO: This switch determines if the notes have to be legato to activate the glide - i.e. if the previous 'note off' has to occur after the current 'note on'.

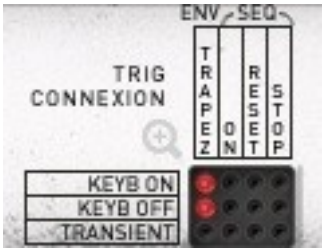
PRIORITY: This switch allows to select the mono priority mode, High or Low. In low mode, when a second note is pressed, it will change the pitch only if this new note is below the previous one. In high mode, it is the contrary.

There are two tabs in this section, **TRIG** and **CTRL**. The first one is displaying the keyboard related trig connection and the second the amount of various keyboard parameters.

Within the **Trig** panel, you will find a check box named "**OLD XILS 3**". When engaged, this parameter allows a almost full compatibility with the previous XILS 3 versions including

- Monophonic Ring Modulator (instead a polyphonic module in the 2.0 version)
- LFO sine frequency twice the triangle frequency (instead of the same frequency)
- Oscillator width amount modulation divided by two

When launching an old preset, this box is engaged, but when tweaking a new preset, it's worth to disengaged it to get all the evolutions and new features.

	In the Trig tab you can easily setup a connection between a trig source and a trig destination. The trig destinations are obviously the envelope but also the sequencer Start, Stop and reset. As you can see, the keyboard is sending a note ON trig and a Note GATE information. This is used to control the envelope for sustain and looping (see the envelope chapter)

	This tab displays the various amount and range of the keyboard related controls: Velocity, After Touch, Keyboard follow, Modulation wheel and Pitch Bend.

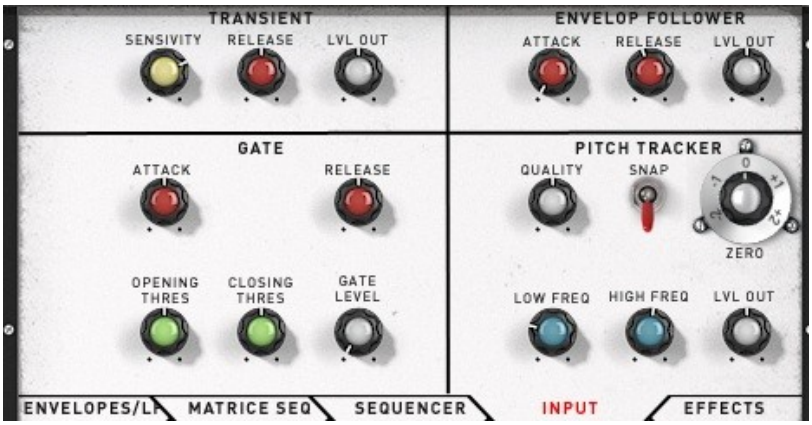
Finally, in this keyboard panel you will fine the **GLOBAL LEVEL** applied after all the internal treatment, the **GLOBAL TUNE**, which set the overall tune of the synthesizer (this parameter is not record in the preset).

The **ANALOG** knob increases or decreases the internal instability.

The **GLIDE TIME** sets the time the keyboard will change its pitch control information.

10.4 Input modules

When using the **XILS 3.2 LE** as an effect processor, the input is going thought the Input modules before being sent to the main matrix.



These input modules can be used as new modulation sources.

10.4.1 Transient follower

The transient follower provides a trig information (to be used in the keyboard trig matrix) as well as an envelop like control signal: The **RELEASE** knob set the time this control return to zero after a transient has been detected.

The **SENSIVITY** knob set the sensitivity of the transient detection: more detection when turning right, less when turning left.

LVL OUT sent the level of this control signal.

10.4.2 Envelope follower

The envelope follower provides an envelop like control signal: The **ATTACK** and **RELEASE** knobs set the time this control raise the input signal level or to return to zero after the input signal is returning to zero.

LVL OUT sent the level of this control signal.

10.4.3 Pitch Tracker

This module extracts the pitch of the input signal. The resulting pitch signal can be applied to the oscillators, but it can also be used to modulate any other modules via the connection matrix.

QUALITY: This knob sets the smoothing of the pitch tracking. Turned left, the smoothing is minimal and the modulation is almost unpredictable, whereas turned right, the smoothing is maximal and the modulation is very slow: applied to oscillators, it gives a glide effect.

SNAP: This switch activates the tune option of the pitch tracker: the pitch will be tuned to scale notes.

ZERP: This double-knob shifts the pitch. It allows you to change the pitch of all the modules that use the pitch tracker signal. The internal part adjusts the shift in semi-tones while the external ring adjusts in octaves.

LOW FREQ: This knob sets the minimal lowest frequency of the pitch tracker. It sets the lowest note that the pitch tracker can handle.

HIGH FREQ: This knob sets the maximal or highest frequency of the pitch tracker. It sets the highest note that the pitch tracker can handle.

The settings of the pitch tracker's frequency range must be adjusted according the input signal. It affects the pitch tracker's tessitura (the range from lowest to highest note expected) and tracking responsiveness. The broader the tessitura, the less precise the detection will be.

Adjust these two settings according to your input signal. As you adjust them, you can see the notes corresponding to the minimal and maximal frequencies.

LVL OUT sent the level of this control signal.

10.4.4 Input Gate

This module is applied on the two effect inputs when the **XILS 3** is used as an effect processor.

ATTACK: This knob sets the time the gate will open.

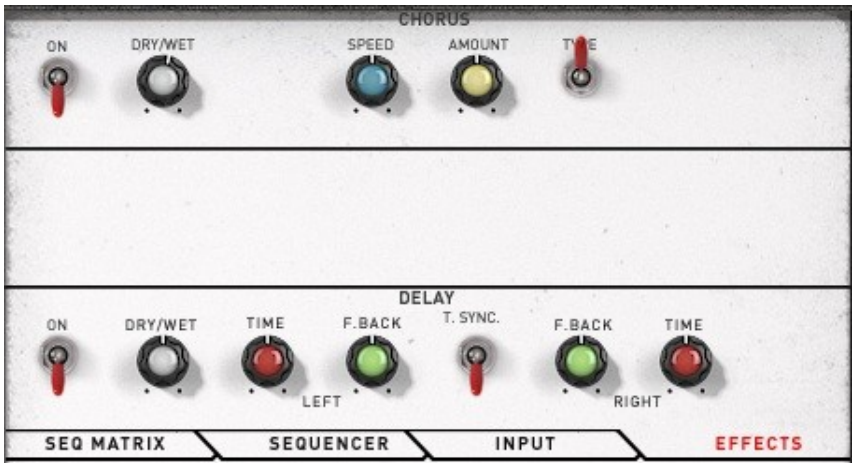
RELEASE: This knob sets the time the gate will close.

OPENING THRESHOLD: This knob sets the threshold over the gate level. The external input signal must at or over this level to open the gate.

CLOSING THRESHOLD: This knob sets the threshold below the gate level. The external input signal must below this level to close the gate.

GATE LEVEL: This knob sets the level for opening or closing the gate.

10.5 ***Effects modules***



10.5.1 Delay

DRY/WET: Sets the mix level between the initial signal and the processed signal
DELAY: set the time delay (right or left)

FEED B: Sets the amount of the delayed signal which is reused (left and right)

TIME: Sets the time of the delay.

DAMP: set the amount of high frequencies that are discarded during the feedback.

MIDI S: Sets the time delay according to the tempo (the time will change each time the current tempo of the host application changes)

10.5.2Chorus

DRY/WET: Sets the mix level between the initial signal and the processed signal

SPEED: Sets the rate of the internal low frequency oscillator of the chorus.

AMOUNT: Sets the amount of the effect.

TYPE: Toggle through the three available types

11 Option menu

This menu allows to choosing the global settings. These settings are defined for all the instances of XILS 3. Each time an option is changed, the related option file is saved.

11.1.1Main

In the toolbar, the **Options** button opens a menu for selecting various options for XILS 3.
This menu shows the following options settings:

XILS 3 About: displays information about **XILS 3** (version, build date and credits).

Open MIDI settings panel: Opens a popup where you can assign MIDI controllers for each of XILS 3's parameters. Click on the parameter label to select the parameter you want assign, then enter the MIDI controller number (from 0 to 127), or switch on the learning switch and send a MIDI command with the correct MIDI controller number. XILS 3 will memorize it. This setting popup can also be opened by CTRL+ALT+Apple+Left-click (Mac) or CTRL+Win+ALT+Left-click (Win) on the desired XILS 3 parameter.

11.1.2Display

Display low frequency as BPM: Allows displaying the low frequency (LFO, oscillator 2 in low mode, clock rate in BPM instead of Hz)

GUI follows presets: When checked, this option allows the GUI to follow the presets. That means that the special display modules are refreshed following the preset settings. Otherwise it keeps the same view.

Output level follows presets: When checked, this option allows the output level to follow the presets. That means that the output level is programmed with the value saved in the preset. Otherwise it keeps its value.

Popup On: shows a popup window while modifying the value of a knob.

Popup Over On: shows a popup window when the mouse is over a switch.

Popup Name On: the name of the current modified parameter is displayed.

GUI update: low: slow refresh rate for the GUI. Useful when it is necessary to save CPU power.

GUI update: middle: standard refresh rate for GUI.

GUI update: fast: fast refresh rate for GUI. Useful when it is necessary to precisely follow the sequencer's led for instance.

GUI Small: select a "small" GUI 1024x800
GUI Reduced: select the reduced version, with the keyboard part dispatched in the Tab panels. This is for low-resolution screens
GUI Big: select the big GUI (not yet available)

11.1.3Misc.

Init settings from current settings: initializes the default values of **XILS 3** from the current settings. All the new presets will be created from these settings, when the **init settings** choice is selected. These parameters will also be used when setting a control to its default value. (Win: CTRL+click, OSX: ALT+Apple+Click).

Wheel Incr: 0.01: parameter increment of 0.01 when using of the mouse wheel.

Wheel Incr: 0.05: parameter increment of 0.05 when using of the mouse wheel.

Wheel Incr: 0.1: parameter increment of 0.1 when using of the mouse wheel.

12 Credits

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